REMARKS

At the outset, the Examiner is thanked for the thorough consideration given the subject application. Claims 1-4, 8, 10, and 13 are canceled. Claims 5-7, 9, and 11-18 are currently pending in this application. Reconsideration and reexamination are respectfully requested.

The Examiner rejected claims 1, 8, and 9 under 35 USC § 103(a) as being unpatentable over Applicants' Figures 1A-1E in view of Park et al. (US Patent No. 6,022,753); and rejected claims 2-7 and 10-18 under 35 USC § 103(a) as being unpatentable over Applicants' Figures 1A-1E in view of Park et al. (US Patent No. 6,022,753) as applied to claims 1, 8, and 9 above, and further in view of Kumar et al. (US Patent No. 6,077,643). Applicants respectfully traverse these rejections.

Applicants submit that the rejection of claims 1 and 8 is moot in view of their cancellation.

Claim 5 is allowable at least for the reason that claim 5 recites a combination of elements including coating a negative-type photoresist on the transparent conductive film and forming an exposed area defining a pixel area at the remaining portion thereof other than a portion corresponding to the data line, the gate line and the thin film transistor area, wherein the photoresist is coated into a thickness of 1.0 to 2.0μm and is soft-baked at a temperature of 100°C to 125°C, wherein the exposed area is formed by exposing the photoresist to a light passing through a transparent part of an exposure mask having an exposure part and said transparent part and then post exposure baking the exposed photoresist, and wherein said post exposure baking is conducted at a temperature of 125 °C to 145 °C.

Claim 14 is allowable at least for the reason that claim 14 recites a combination of elements including coating the transparent conductive film with a negative-type photoresist; exposing the negative-type photoresist with an image of a pixel electrode, wherein the image of a pixel electrode does not fully extend across the data line and the gate line, wherein the negative-type photoresist is coated with a thickness of 1.0 to 2.0μm and soft-baked at a temperature between 100°C to 150°C before exposure, and wherein said post exposure baking is conducted at a temperature of 125 °C to 145 °C.

None of the cited references, singly or in combination, teaches or suggests at least these features of the claims.

In contrast to the present application, Applicants' Figures 1A-1E disclose coating a positive-type photoresist 29 on the transparent conductive film 27 and forming an exposed area 30 in correspondence with the data line 23, the gate line (not shown), and the thin film transistor. Applicants respectfully submit that Figures 1A-1E teach away from coating a transparent conductive film with a negative-type photoresist and forming an exposed area...at the remaining portion thereof other than...corresponding the data line, the gate line and the thin film transistor area, and wherein the image of a pixel electrode does not fully extend across the data line and the gate line.

The Examiner cites Park et al. in an attempt to cure the deficiencies of Applicants' Figures 1A-1E. Applicants respectfully submit that Park et al. teaches away from forming an exposed area defining a pixel area at the remaining portion thereof other than a portion corresponding to the data line, the gate line and the thin film transistor area, and wherein the image of a pixel electrode does not fully extend across the data line and the gate line. In Park et al., the exposed area is formed at a portion in correspondence with the data line, the gate line, and the thin film transistor. Columns 3-5.

Applicants respectfully submit that the combined teachings would not suggest a modification of a method of fabricating a liquid crystal display device including coating and exposing a negative-type photoresist on a transparent conductive film as recited by claims 5 and 14. Such combination is suggested only by the claimed invention, which is considered impermissible hindsight reconstruction. Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness.

The Examiner cites Kumar et al. as teaching a soft-baked temperature range of 100-125 °C, a post-exposure baked temperature range of 110-140 °C, and that those skilled in the art would find a proper thickness. Kumar et al. fail to cure the deficiencies of the combination of Applicants' Figures 1A-1E and Park et al.

Kumar et al. does not teach or suggest the claimed invention as a whole. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); see also *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976). The invention of this application comprises a method of fabricating a liquid crystal display device by using a specific thickness of a photoresist, and soft-baking and post-baking the photoresist at specific temperatures. Kumar et al. may teach soft-baking and post-baking the photoresist at specific temperatures using specific processes and specific apparatuses, but fail to teach or suggest explicitly or implicitly the thickness and temperatures as recited by claims 5 and 14.

Further, the Applicants have discovered through experimentation that electrical shorts can be prevented using the claimed fabricating method. Applicants have discovered the source of a problem and through experimentation, has identified a solution. Kumar et al. does not attempt to solve similar problems with the same solution. "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the

source of the problem is identified. This is part of the 'subject matter as a whole', which should always be considered in determining the obviousness of an invention under 35 U.S.C. § 103." *In re Sponnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969). However, "discovery of the cause of a problem . . . does not always result in a patentable invention. . . . [A] different situation exists where the solution is obvious from prior art which contains the same solution for a similar problem." *In re Wiseman*, 596 F.2d 1019, 1022, 201 USPQ 658, 661 (CCPA 1979) (emphasis in original).

Furthermore, the Examiner has not pointed out a particular finding as to the specific understanding or principle within the knowledge of a skilled artisan, either expressly or by implication that would have motivated one with no knowledge to combine or modify Applicants' Figures 1A-1E. Applicants respectfully submit that no proper motivation or suggestion is found for one of ordinary skill in the art for a modification to arrive at the claimed thickness and temperatures. Further, such combination is suggested only by the claimed invention, which is considered impermissible hindsight reconstruction. Through the combination of references used by the Examiner, he has taken a specific aspect of the claim, i.e., using a negative photoresist, to be the only advantage of the invention, and disregarded the other elements of the claim. Accordingly, Applicants respectfully request withdrawal of the rejection based on the combination of references. Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. Applicants respectfully request that the rejection under 35 USC § 103(a) be withdrawn.

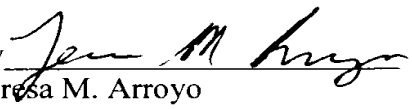
In view of the above amendments and remarks, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

If the Examiner deems that a telephone conference would further the prosecution of this application, the Examiner is invited to call the undersigned attorney at (202) 496-7371. All correspondence should be sent to the below-listed address.

If these papers are not timely filed at the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

Dated: March 7, 2003

Respectfully submitted,

By 

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Please amend the claims as follows:

5 (Amended). [The method according to claim 4,] A method of fabricating a liquid crystal display device having a thin film transistor with a gate electrode, a gate insulating film, an active layer, an ohmic contact layer, and source and drain electrodes on a transparent substrate, the liquid crystal display further includes a gate line connected to the gate electrode and a data line connected to the source electrode that define a pixel area, said method comprising the steps of:

forming a passivation layer covering the thin film transistor and the data line on the transparent substrate and patterning the passivation layer to define a contact hole for exposing the drain electrode;

forming a transparent conductive film being in contact with the drain electrode via the contact hole on the passivation layer;

coating a negative-type photoresist on the transparent conductive film and forming an exposed area defining a pixel area at the remaining portion thereof other than a portion corresponding to the data line, the gate line and the thin film transistor area;

developing the photoresist such that the unexposed area is removed, thereby forming a photoresist pattern; and

patterning the transparent conductive film using the photoresist pattern as a mask to form a pixel electrode in contact with the drain electrode via the contact hole; and

removing the photoresist pattern,

wherein the photoresist is coated into a thickness of 1.0 to 2.0μm and is soft-baked at a temperature of 100°C to 125°C,

wherein the exposed area is formed by exposing the photoresist to a light passing through

a transparent part of an exposure mask having an exposure part and said transparent part and then post exposure baking the exposed photoresist, and

wherein said post exposure baking is conducted at a temperature of 125 °C to 145 °C.

6 (Amended). The method according to claim [3] 5, wherein said exposure part of the exposure mask corresponds to the pixel area, and a shielding part thereof corresponds to the data line, the gate line and the thin film transistor area.

7 (Amended). The method according to claim [1] 5, wherein said development is conducted by an alkali aqueous solution for 60 to 120 seconds.

9 (Amended). A method of fabricating a liquid crystal display device according to claim [8] 14, further including removal of the photoresist pattern.

11 (Amended). A method of fabricating a liquid crystal display device according to claim [8] 14, wherein exposure is performed by passing light passing through an exposure mask having transparent part and an opaque part.

14 (Amended). [A method of fabricating a liquid crystal display device according to claim 13,] A method of fabricating a liquid crystal display device, comprising:

forming a thin film transistor having a gate electrode, a source electrode, and a drain electrode on a transparent substrate;

forming both a gate line that is electrically connected to the gate electrode and a data line that is electrically connected to the source electrode;

forming a passivation layer over the thin film transistor, the gate line, and the data line;

forming a transparent conductive film over the passivation layer;

coating the transparent conductive film with a negative-type photoresist;

exposing the negative-type photoresist with an image of a pixel electrode, wherein the image of a pixel electrode does not fully extend across the data line and the gate line;

developing the negative-type photoresist such that the unexposed area of the negative-type photoresist is removed and a portion of the transparent conductive film is exposed; and

patterning the transparent conductive film using the photoresist pattern to form a pixel electrode

wherein the negative-type photoresist is coated with a thickness of 1.0 to 2.0μm and soft-baked at a temperature between 100°C to 150°C before exposure, and

wherein said post exposure baking is conducted at a temperature of 125 °C to 145 °C.

15 (Amended). A method of fabricating a liquid crystal display device according to claim [8] 14, wherein patterning the transparent conductive film uses a wet etchant.

16 (Amended). A method of fabricating a liquid crystal display device according to claim [8] 14, wherein developing the negative-type photoresist uses an aqueous alkali solution.

17 (Amended). A method of fabricating a liquid crystal display device according to claim [8] 14, further includes the step of forming a contact hole through the passivation layer so as to expose the drain electrode.

18 (Amended). A method of fabricating a liquid crystal display device according to claim 17, wherein the transparent conductive film contacts the drain electrode through the contact hole.